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## Introduction

ABKaspo's Ultra Realistic water (A.U.R.W) is our water package, this one help to developers adding water to their projects. Before following this documentation check for a new version in our website clicking [here](#).

### A.U.R.W.

This package adds Water to unity projects, helps developers creating environments. This package has different versions for every Unity's Render Pipeline.

A.U.R.W.			
	Free	Lite	Pro
URP	✓	✓	×
HDRP	✓	×	×
BIRP	×	×	×

Here on the side, you can see the table that shows the available versions, make you sure that you have the updated documentation.

### About us

We are a small group of friends, who want to help every developer in Unity. We started publishing in asset store in 2021, we started with AURW Free URP. AURW (for now) is our biggest project, before publishing other packages we want finish AURW for every Unity's rendering pipeline.

If you have any problems or questions with one our packages you can go to our Client Support clicking [here](#), but if you want download Packages demos click [here](#) and search the package.

You can contact us at: [abkaspo@gmail.com](mailto:abkaspo@gmail.com)

You can visit our website in: <https://bryanirp.github.io/ABKaspo/index.html>

You can check our Instagram profile: [https://www.instagram.com/abkaspo\\_games/](https://www.instagram.com/abkaspo_games/)

You can watch our videos in YouTube: <https://www.youtube.com/@ABKaspo-Games>

And you can see our Unity Asset Store Profile: <https://assetstore.unity.com/publishers/53199>

### Free Version URP

This is a little test of AURW potential, scripts are less present but its ideal for a mini game, but if you want to a complex game, we don't recommend use this package.

This is *A.U.R.W. URP Free Version 4.0* in next title you are going to see the change log. This will be our last update in a long time.



Figure 1 A.U.R.W. Logo

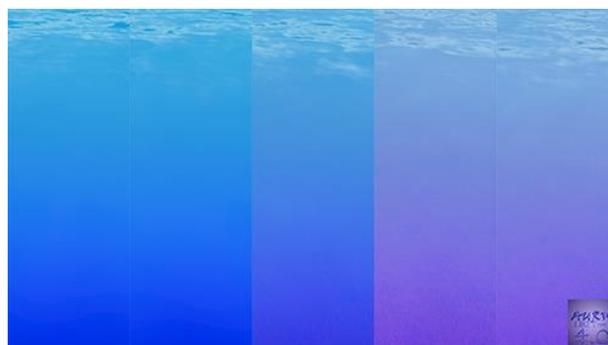


Figure 2 Comparison between different material settings

A.U.R.W. URP Free version 4.0! After last big update (A.U.R.W. 3.0) we decided to create a compatibility between different quality versions, in our opinion we have to create a simple folder organization to help developers understand how this package works and for a download compatibility, we mean if you decided to download Free version and decided to upgrade, you just have to pay and import the asset to your project and the asset will be shared between 2 versions.

This is a big update, new things, and new organization. But why? Because a new AURW version is coming soon, if you notated in the introduction in URP line there is a column named as "Pro". A.U.R.W. URP Pro version is coming soon! And we decided to, before starting developing pro version, create a compatibility between Free version and pay versions like A.U.R.W. URP Lite and soon A.U.R.W. URP pro.

## What is new?

This update has changed somethings

Change list:

1. Changed folder organization (things are coming)
2. We started experimenting with planar reflections, if you look for it in scripts folder you will saw "our" script. We stole it from [here](#).
3. Added a shader editor.
4. Changed all shaders. (again)
5. Changed demo scene. (again)
6. Demo executes for windows, download [here](#).

We are working on new version A.U.R.W. URP Pro, so this will be our last big update, for now (October 2023)

## How to set up?

This time it is an easier tutorial, you just need to create a material, on the material inspector select shader "Shader Graphs / Easy Water".

Don't forget to change normal and colors, if you want to a speedy set up, but if you want to do a custom set up, you are free to do it, don't forget to change "Water quality" and "Refraction type" for a better rendering depending on your export platform. You may enable displacement (Tutorial in next chapter).

Pd: if you change the shader, you must change the ShaderGUI at "scripts -> Editor -> GUI -> Shader -> AURW\_Free\_Shader\_GUI.cs". And don't forget that you can change the shader graph!

## How to add displacement?

The displacement is based on the position of the object, then divided into red and blue (x and y), multiplied by the frequency variable added to time (wave speed variable), then sine and multiplied by frequency, there are 2 outputs, we add the green channel of the object position (y) and combined, using R and B (x & y) from the object position and Y in the green channel.

By default, displacement is unenabled, but if you want to use it you must enable it, on the footer there is a toggle, press it and there will appear three new variables. Before enabling it you must know that it's created from noise so if you want to export to a mobile platform you must disable it for a better performance.

Variables	Function
Wave Speed	Change wave speed. We recommend this variable at 0.05
Wave Amplitude	Change wave size. Depending

	on your scene wind this must be higher or lower
Wave Frequency	Change wave frequency. Obviously changes the waves quantity

## Technical details

If you are looking for more details, or just browsing this chapter is for you!

### Refraction

There are two refraction types, Advanced and Normal. In the inspector in “Rendering” zone there’s a popup, you can change the type and know differences between different qualities here down:

#### Advanced

This refraction is based on Normal Map strength, so the variable “Refraction” change index of refraction, and view direction, there isn’t any rendering error.

Refraction is calculated by a custom function.

Normal Map is transformed to tangent, normalized, and input to Normal Map Input, View Direction node is normalized and input to ViewDir and a float is input to IndexOfRef

Refraction (Custom Function)	
Normal (3)	Out
ViewDir (3)	
IndexOfRef	

```
1 // Refraction
2 Out=refract (ViewDir, Normal, IndexofRef);
```

Then out is transformed from world to tangent, added to “Screen Position” node and input to scene color. This is coding black’s Refraction, if you want to read the post click [here](#).

#### Normal

This refraction distorts everything between camera and water, so there’s a rendering error, but it’s ideal for high point of vision so this can help optimizing.

Normal Map and Refraction are multiplied and input to scene color.

### Reflection

Reflection is not ready, it is a beta so we must change somethings, but we are near. It is based on camera position, but we must fix the scale and position rendering.

The script we stole from [here](#), so if you have a question for reflection we can’t help you.

### Water Quality

Water quality is the type of depth, high or low, it is just a minimal detail. It changes foam rendering, coloring, and normal mapping too.

High is based on view vector, so it requires more than Low, it is based on camera far plane, and like refraction one is ideal for high point of vision like from a plane or mountain.